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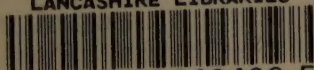
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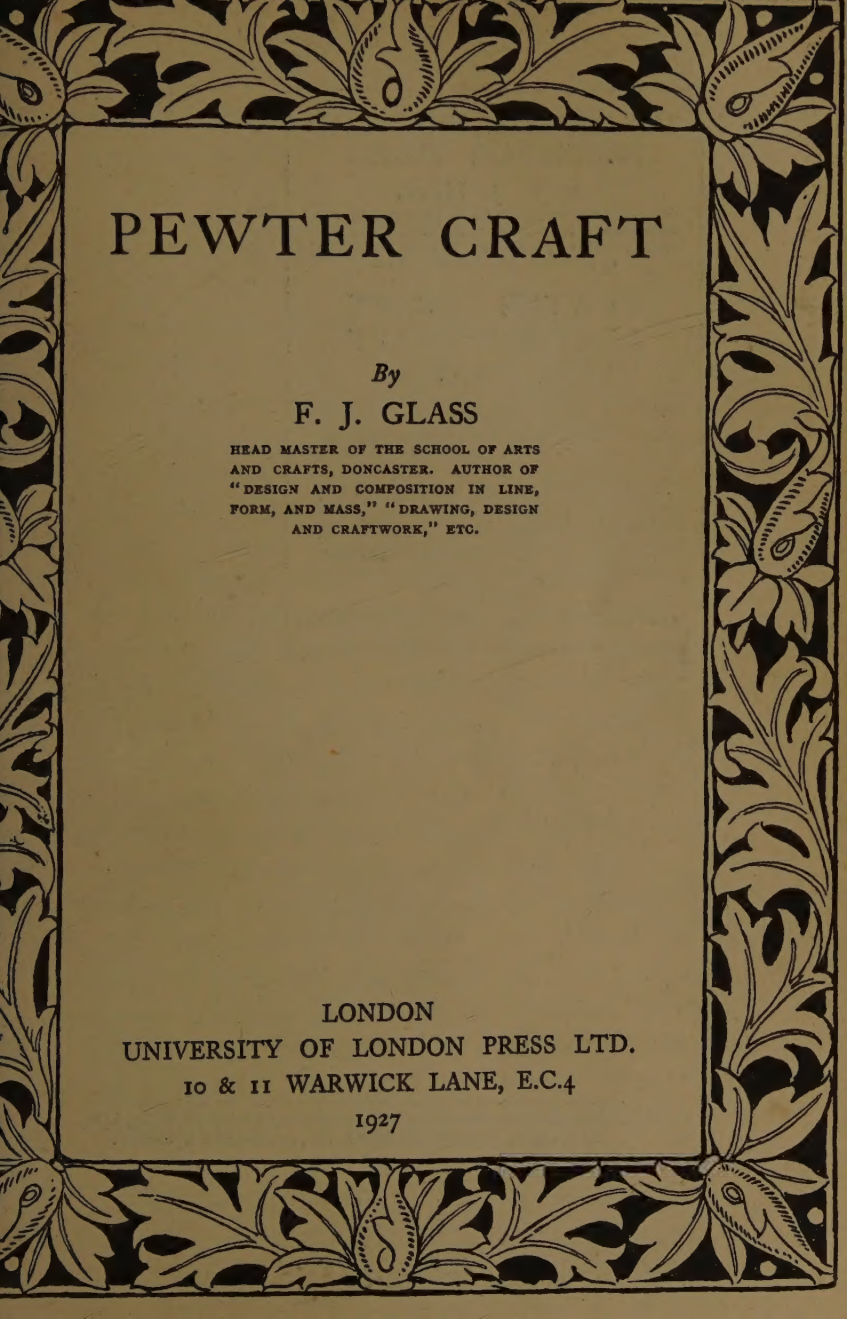
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PEWTER CRAFT

THE ARTISTIC, PRACTICAL HANDICRAFT SERIES



FOR TEACHERS,
STUDENTS, AND
CRAFT-WORKERS.
F. J. GLASS.



PEWTER CRAFT

By
F. J. GLASS

HEAD MASTER OF THE SCHOOL OF ARTS
AND CRAFTS, DONCASTER. AUTHOR OF
"DESIGN AND COMPOSITION IN LINE,
FORM, AND MASS," "DRAWING, DESIGN
AND CRAFTWORK," ETC.

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1927

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PREFACE

EVERY normal person desires to make things. The creative instinct which is born in each one of us clamours for expression. In some no doubt the urge is more insistent than in others, perhaps because, having found a means of expression, the capacity for creation has not been allowed to atrophy. Most children love to make things, and should be encouraged to do so for many reasons. Craft lessons are of the greatest educational value, because they stimulate mental and motor activity simultaneously. It is generally admitted that when hand and brain are both employed much more is grasped and retained than when the brain alone is called upon to function. Furthermore, habits of industry are formed which are bound to be beneficial in the future. Children so trained are more likely to become useful and contented members of society in after-life than are those brought up with no craft instruction whatever. For if no other purpose is served, it provides them with useful and satisfying hobbies wherewith to occupy their leisure time. The tendency in commerce and industry is to shorten the hours of labour with a corresponding increase in the leisure hours. The

danger of this lies in the fact that too few know what to do with their increased leisure. Often the creative faculties have become atrophied through neglect, and the adult is robbed of one of the greatest sources of happiness. We would advocate the teaching of craft work in every school, and would urge all those who desire to make things of use and beauty to seize any opportunity that may offer to gratify this desire. There is a keener appreciation of hand-made goods nowadays than there has been for many years. This is a natural reaction against the mechanically perfect, but soulless products of machinery. It would seem that the future holds brighter prospects for skilled craftsmen and also for craft teachers than at any time since machinery began its rule. There is certainly a revival of artistic handicrafts. Consequently a demand for instruction in the crafts has arisen, and it is to meet this demand that the present series of hand-books is being produced. They are intended to provide teachers and craft workers with concise practical instructions, and suggestions for the various crafts in a cheap, handy form.

FRED J. GLASS.

DONCASTER, 1927.

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PEWTER CRAFT

CHAPTER I

NATURE OF MATERIAL, TOOLS, BROOCHES, PLANNING, PUNCHES

HISTORICAL EXAMPLES

PEWTER provides an easy method of approach to metal craft generally, because it is more easily manipulated than other metals or alloys, with the possible exception of lead, which is too soft in quality and too sombre in colour to be of much value for decorative purposes. Pewter can be purchased in sheets of varying thickness, smooth, polished, and ready for use. It is advisable to get two or three sheets of different gauges, so that the most suitable may be selected for the work in hand. For brooches, hatpin-heads, and other small articles which are fashioned upon a basis of stouter metal, thin pewter is best, because it allows itself to be wrapped about the basic metal without appearing clumsy. For bowls, cups, and vase forms the pewter must necessarily be thicker in order that it may be beaten or "raised" to the required form without loss of strength or rigidity.

Pewter is an alloy of tin and lead, or tin and copper, with a preponderance of tin. A modern substitute is "Britannia" metal, composed of tin and a small proportion of copper and antimony. Owing to its extremely low melting-point, pewter requires extreme care in soldering. Some tools are necessary, though an elaborate outfit, such as that often advertised for the purpose, is by no means essential.

For preliminary work a steel modelling tool, a pair of dividers, a repoussé hammer, shears, a couple
Tools. of rough files, and a few shaped punches, which can be fashioned from stout nails or iron rod, are sufficient. Later a mallet or two, a frame and some fret-saws, a sandbag, some stakes of varying section, of hard wood or iron, a collet hammer, raising hammer, planishing hammer, and a blowpipe for soldering will be needed. For repoussé work or embossing, a pad of felt is required. Simple articles of adornment such as brooches, buttons, hatpins, etc., can be fashioned with the aid of the shears, steel modeller, and punches only. Patterns of great variety are obtainable from the punches, simply by impressing them upon the metal, which rests upon a pad of felt or other yielding surface. For copper and brass a "pitch" bed, composed of pitch, resin, tallow, and plaster of Paris, is generally used, but for pewter this is by no means necessary. The punches, which, as previously stated, can be filed from iron rod or stout nails, are the

principal factor in the production of the pattern. A number of these can be obtained from dealers in tools, but it is better to make them ourselves as far as possible. In this way we are more likely to get the forms we require, while it inculcates self-reliance, and on the whole leads to better craftsmanship. A few shapes are illustrated on Fig. 1, together with some of the combinations and arrangements which can be obtained from them. It is an excellent plan to undertake a few experiments of this type, as it leads to an appreciation of the possibilities of the method, while it cultivates a faculty for design as the outcome of the correct use of tools and materials. For school work in particular this method is valuable, because it provides a fascinating occupation of great educational importance. The ornament thus obtained may be utilised for the decoration of brooches, buttons, hatpins, and also of wooden articles such as boxes, caskets, brush and mirror backs, etc.

EXERCISES

Our first exercise should be as simple as possible in order that we may learn something of tools, materials, and methods without undue strain or risk of failure and disappointment.

*Brooches,
etc.*

Perhaps the best beginning is with a brooch or button. Metal bases for these with pin, fastening, etc., attached, can be obtained from dealers in tools and metals. Having procured a suitable base and

chosen a sheet of thin pewter, we can commence operations. A pewter brooch pure and simple, with no other adornment, is apt to be somewhat uninteresting; at any rate it lacks the charm which is given by a "Ruskin stone," an enamel, a stone, or other spot of colour. Mother-o'-pearl looks very well if the pewter is oxidised.

Assuming that we have a "Ruskin stone" in addition to the materials previously mentioned, we must decide where to place it. Generally the centre is the most suitable position, though this depends to some extent upon the nature of the design. It is a good plan to fix the stone to the metal back with seccotine, cement, or other adhesive, as it facilitates future work and prevents it from slipping. Lay the metal base, or brooch back upon a thin sheet of pewter, and draw a line around the outside. Allow $\frac{1}{4}$ or $\frac{3}{8}$ of an inch all round for turning under. Now with the shears or a pair of scissors cut the pewter to shape. An opening must next be arranged for, in order to display the Ruskin stone. Lay the stone on the pewter in the position it is intended to occupy and mark round the outside. This time, however, we shall need to cut out a shape somewhat smaller than the stone itself, in order that it may be kept in position by the overlapping margin. It now remains to cut the desired opening.

If a frame and fret-saws are available the procedure is as follows. Drill a hole somewhere near the line



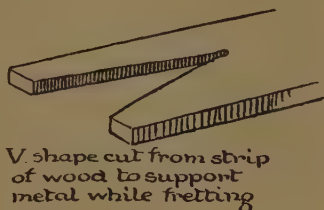
FIG. 1.

to be cut, but inside the line rather than upon it, or it may break the continuity of the shape. Take the frame and fasten a saw into its lower jaw, *Fret-saws.* making it quite secure by tightening the thumb-screw. The saw, which is very fine and much like a rectangular wire with teeth, must be correctly set in the frame. The teeth should face outwards away from the frame, and also downwards, so that the downward stroke may be the cutting stroke. To determine the set of the saw, run the thumb lightly along the teeth and it will be found that in one direction it feels comparatively smooth, while in the other there is a decided "bite," which is enough to cut the flesh if the thumb is pressed too heavily. Place the saw in the frame with the smooth set of the teeth upwards and the "bite" downwards. Pass the thin blade through the hole in the pewter, bend the frame by pressing the top against the bench, and while the frame is thus contracted, screw the upper end of the blade in the top grip. When taken from the bench, the frame expands or springs back into position, holding the saw in tension. It must be quite taut, or it will bend when cutting commences, and in all probability it will snap.

The actual cutting or fretting requires care and a little practice. It is a good plan to practise upon a spare piece of metal before starting upon any important work. Further the pewter requires adequate support while the cutting is in progress, or it will slip and

break the saw. For this purpose a strip of wood with a V-shaped space sawn from one end is useful. The tapering cut enables us to move the metal forward or backward, so that it may rest upon both sides of the support, however small may be the work (Fig. 2).

While the cutting is in progress, the saw must be kept quite vertical, as the tightly strung blade of highly tempered steel is easily snapped. It should be worked quickly and firmly up and down until



V shape cut from strip of wood to support metal while fretting

FIG. 2.

it can be felt cutting. If it sticks, don't try to force it, but move it gently about, until it is free again, and remember that the cutting is done entirely by the down stroke. A little practice soon enables us to cut along a line quite comfortably, though it is wise at first to keep just a shade inside the line, and to true it up with files or a sharp penknife later on. If a saw is not

amongst the equipment, the aperture may be cut with a sharp-pointed penknife, but only if our metal is thin. Having pierced the pewter and trimmed up the edges of the aperture with files or penknife, it is ready for decoration.

PLANNING

It is a good plan to make one or two sketches upon paper in order to think out a pleasing arrangement

before starting upon the metal. The first attempt should be some arrangement which can easily be obtained by means of the punches previously mentioned. We have seen what these are capable of by earlier experiments, and a combination of bosses obtained therefrom will provide decoration suitable for our purpose. With a soft pencil sketch a few guide-lines upon the reverse side of the pewter, and lay it face downwards upon a pad of felt.

Now press the punches firmly upon the spots indicated for them by the pencil marks. For thin metal it is possible to exercise sufficient pressure with the hands alone, but for thicker metal a repoussé hammer will be required. See that the punch is held vertically in order that

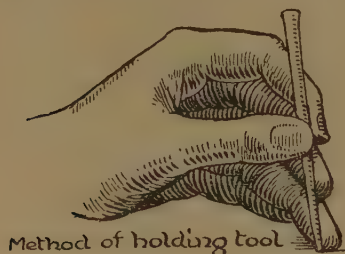


FIG. 3.

the impression may be true and even. The method of holding the tool when the hammer is used is shown in Fig. 3. Turn the pewter over, and it will be seen that the depressions on the underside have produced

bosses corresponding in shape with the punches upon the right side. While this work is in progress, the stone has been fixed to the metal back. Lay the pewter in position, with the aperture correctly placed over the stone, and bend it over the edge

of the metal. Burnish the edge over with the steel modeller, and file down any ridges which occur, so that it may lie flat, Fig. 4. It only remains to polish and oxidise if desired, and the work is finished.

In this exercise we have discovered how easy the metal is to manipulate. We may now proceed to undertake some of the more complex designs shown on Figs. 5 and 6.

On Fig. 6 some arrangements are shown whereby the pewter forms a pattern upon the "Ruskin stone." This adds to the interest and beauty of the work, though it also adds to the difficulty of the fretting. In many of these designs the work is mainly executed with the steel modelling tool upon both the back and front of the metal.

When working upon the front, however, care should be exercised to avoid scratching the pewter, as it is very soft and liable to damage if the tool is at all sharp. Boxwood, bone, or ivory tools are useful for surface work, as they are less likely to spoil the smooth face,

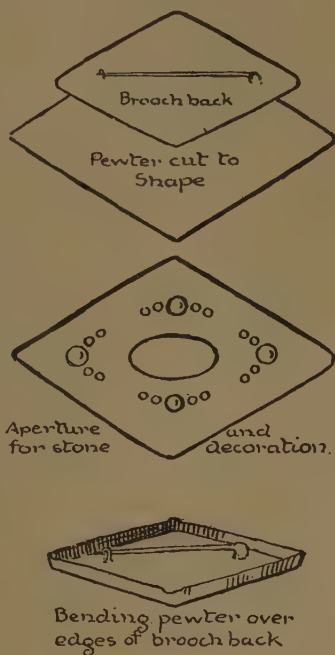
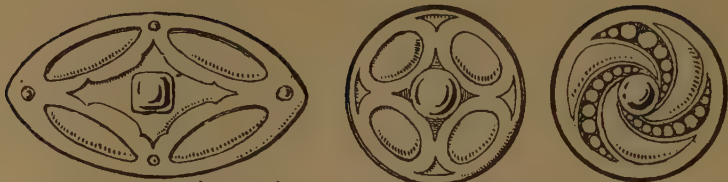


FIG. 4.



Designs for brooches and hatpins



F. J. Glass,

FIG. 5



FIG. 6.

but a well-burnished steel tool will not hurt it. It is a good plan to have a leather buff handy upon which to rub the tool now and then if it loses its polish. In these matters, however, experience is the best guide. It may be that the brooch back, as purchased, is not quite the shape we desire, but we can easily file it into the necessary form.

HISTORIC EXAMPLES

On Fig. 7 some examples of mediæval metal work are shown, because they are suggestive of possible work in pewter. The actual examples are from iron, but there is no reason why they should not be carried out in a softer, more easily manipulated metal such as pewter. There is much to be learned from the study of the work executed by the craftsmen of bygone days, for the best of them were highly skilled and possessed a fine sense of design as the outcome of a right and straightforward use of tools and materials. The escutcheons might easily be executed in pewter, while the nailheads offer suggestions for brooches, hatpins, etc. There is a vast store of such material in our museums, while numerous illustrations are available from which we may obtain inspiration and knowledge. We can hardly hope to produce work of really good quality unless we are familiar with what has already been

*Mediæval
Work.*

*Escutcheons,
etc.*

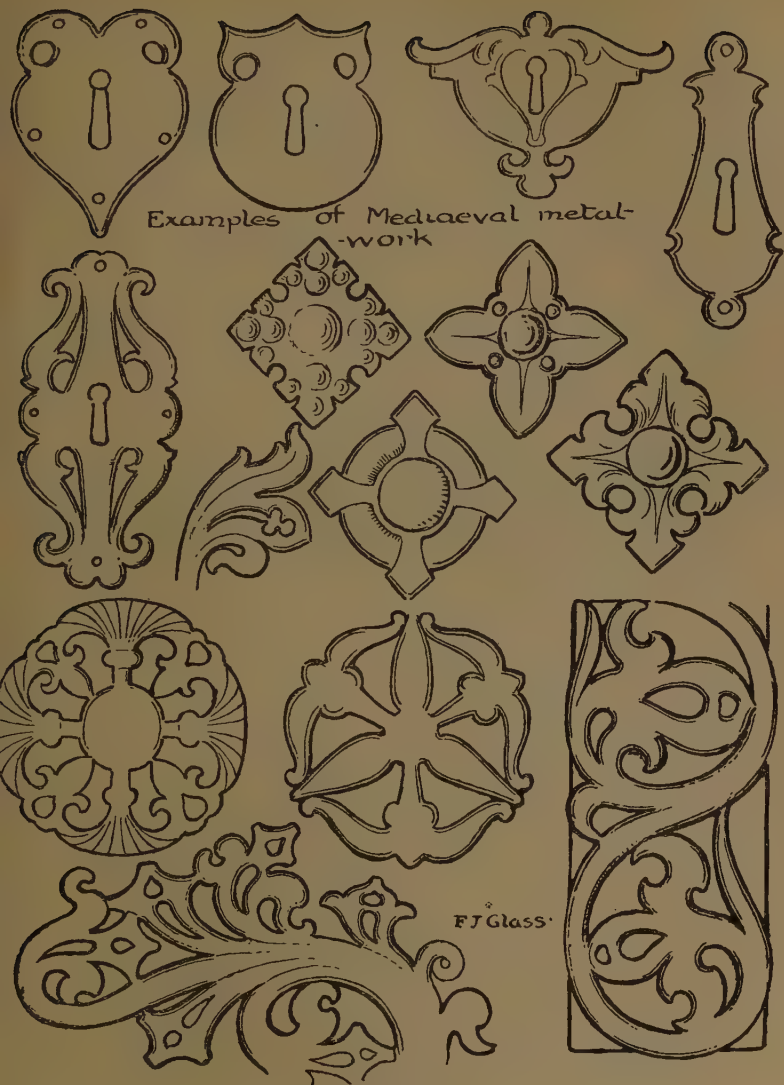


FIG. 7.

done. It is futile to ignore the lessons which older craftsmen would teach us by the fruits of their labours. Much that they learned through long years of toil and thought can be ours if we are prepared to examine and consider carefully the outcome of their efforts.



CHAPTER II

PEWTER APPLIED TO WOOD, ETC.

AFTER making a few brooches, hatpins, or other simple articles, the application of pewter decoration to surfaces of wood should prove comparatively easy. A finger-plate or other plain, flat surface is perhaps the best to commence with.

Pewter and Wood. Having procured the wooden shape, we first consider its shape and proportion, and

prepare our design accordingly. A drawing on paper should be made, so that lines and masses may be planned before we commit ourselves to the more difficult metal. Our first considerations are the purpose for which the work is intended, the shape of the wood to be decorated, and the tools and materials to be employed. A finger-plate is intended to occupy a certain place upon the door, where it is fastened in an upright position. It is not like a tray or other object which, being viewed from all angles, needs a design which reads from any point of view. A

Design. finger-plate may consequently be treated as an upright panel springing from the base, so to speak, or may be balanced upon its centre with the design running upwards and downwards from the centre. Examples of both forms are shown

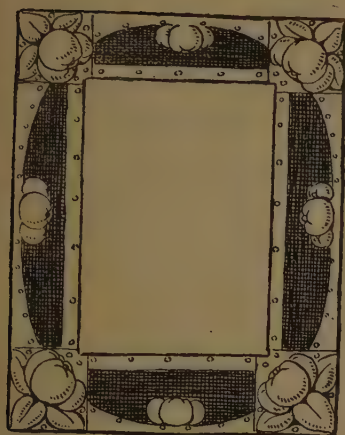
on Fig. 8. The first has a group of berries at the top with conventional leaves and stems growing from a central stalk.

When the design is satisfactorily planned on paper (and the wisdom of this procedure will be apparent should we be rash enough to commence upon the metal, without due knowledge and experience), it is transferred to the pewter. This may be done either by means of carbon paper or by tracing the lines through the paper directly on to the metal with a steel point (a knitting-needle serves very well)

Pad for working upon. The pewter should rest upon a pad of felt, leather, linoleum, or even a few sheets of blotting-paper, as the point should indent the lines upon the pewter, and this can only happen if the material beneath is somewhat yielding. Wood is rather hard, while glass or marble, though useful at other stages, is altogether too rigid for the purpose.

When all the lines are traced, the modelling is executed with the steel modeller while the metal rests upon the pad. The forms are embossed by pressing up from the back, and further treated from the front, while the pewter rests upon a sheet of glass to ensure a flat ground. Care must be exercised to avoid scratching the front of the metal, as it is soft and easily scarred.

The next stage is to pierce the metal and cut away the necessary parts, so that the wood may appear



Frame

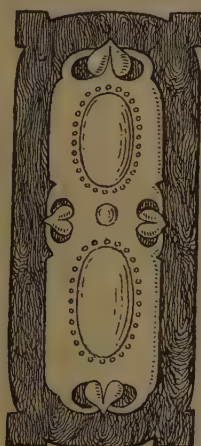


Applied
pewter
decoration

Blotting pad



Door pull



Escutcheons
in pewter



F. J. Glass.

FIG. 8.

as a background with the ornament upon it in metal. A sharp penknife will serve if the pewter is thin, otherwise the fret-saw will be required. When this is complete, the edges are trimmed either with files or by cutting and scraping with the knife, and the metal is fastened in position. Small nails are obtain-
Fastening. able specially made for the purpose, and they should be so placed as to help in the design, at the same time as they keep the metal in place.

The second design is executed in exactly the same manner. The frame needs a little consideration,
Frame. unless we are prepared to cut into a large sheet of metal. It is better to build up in sections, not only because it is more economical but because it is easier to handle. The inner border is composed of four strips mitred at the corners. The outer border is also composed of four pieces suitably shaped and modelled. The angle pieces are square, and serve to cover the joints in the other pieces. One carefully drawn design serves for each of these, and being traced through for each separate piece makes for uniformity. The modelling is executed with the steel modeller upon felt, leather, or a pad of blotting-paper. The wood requires staining
Colour of Wood. a suitable colour—black, brown, grey, a soft green, or any other which may harmonise with the door upon which it is to be placed. This should be done prior to fixing the

pewter in position with the small nails. The metal should be turned over the edges to ensure a neat finish. The blotter is also worked upon a basis of wood, though there is no need to leave the wood exposed if leather, textile fabric, or other material is preferred.

Pewter looks very well upon leather, whether it be velvet calf, suède, morocco, or modelling calf.

Other Materials. Charming results can be obtained by combining pewter with a well-chosen leather of soft colour. It is also very effective when applied sparingly to embossed leather, "but that is another story," as Kipling says. Here the design has grown out of the purpose for which the article is intended, and the nature of the material.

Having decided to incorporate the word "Blotter," it was necessary to arrange for a suitable label upon which to place it. A car-
Design. touche form suggested itself, because it seems to be so closely associated with metal work. This was expanded in order to bring it into contact with the borders, and to assist in knitting the design together. The border itself is plain, but quite in keeping with the method of working.

The wreath was introduced to provide a contrast in form and texture to the otherwise fairly rigid, flat treatment which obtains. The severity of the circular wreath does not detract from the general austerity of the design. If desired, a stone or piece

of enamel can be set just below the lettering to provide a spot of bright colour, but care must be exercised or it will project beyond the surrounding surface, making it impossible to place other books upon it, if at any time it should be necessary to do so. The escutcheons, on the same plate, are cut with shears and fret-saw from fairly stout pewter, the decoration being applied with the punches previously mentioned.

The hand-mirror and brush-backs on Fig. 9 are obviously applied to the wood which underlies the pewter. The forms chosen are fairly common, and therefore easily procured. In each case the design has evolved from the shapes to be decorated and the material to be used. The peacock (suggestive of vanity) is strictly conventional in order that it may lend itself readily to treatment. It has been made to conform to the shape of the brush, and is therefore to be regarded strictly as decoration. The three brush-back designs are purely abstract, just shapes of metal upon shapes of wood with both playing their due part in the production of the ultimate effect. They have simply grown out of the controlling shapes and the logical use of the material in use.

The hand-mirror introduces flower and leaf forms, though here again they have been kept rigidly within the bounds of design as dictated by purpose and material. The circle is the dominating factor, and all the lines in the design have been planned

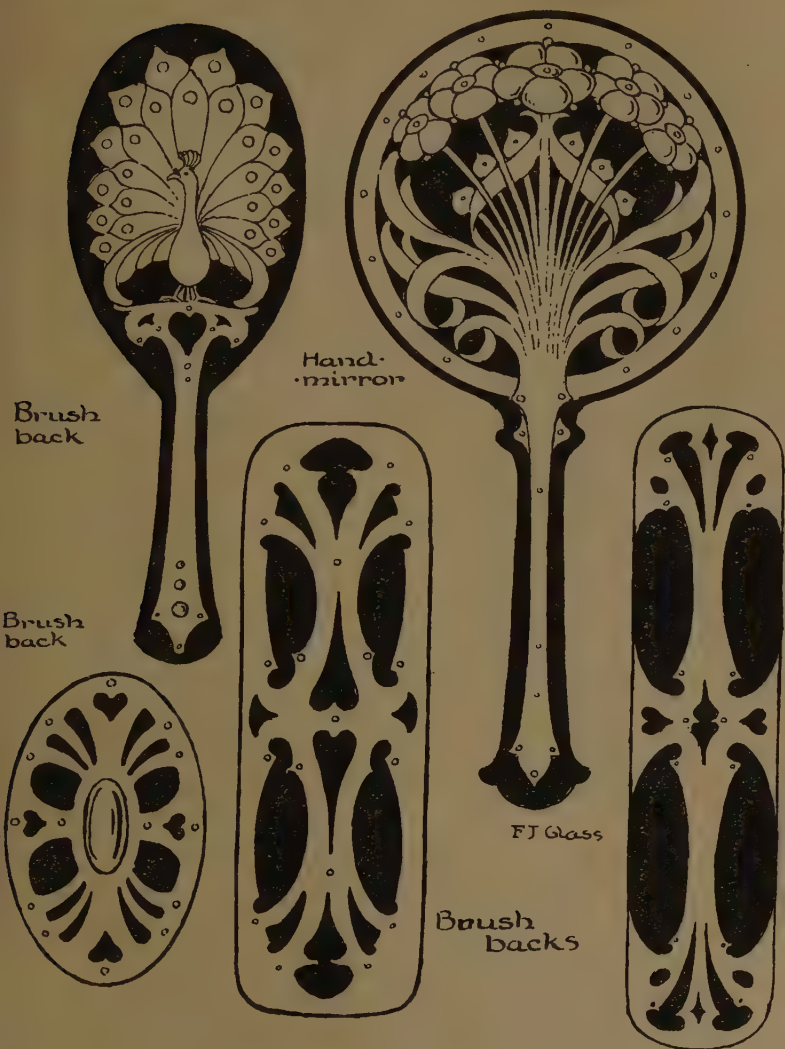


FIG. 9.

with a view to a harmonious combination with the circle. All these lines radiate from a common start-point, swelling out towards the circumference, the lower set in the form of leaves, the upper ones as



FIG. 10.

stems capped with flower forms, while a row of buds follows the line of each central leaf. The design is prepared on paper and traced through to the pewter because it is so much easier to arrange lines and masses when there is freedom from restraint. On paper one can draw easily, and tentative lines can be sketched and erased without risk of damage to the material. On pewter it is difficult, almost impossible, to erase a line once incised.

After the design is transferred to the metal it is modelled with the steel modeller upon felt, leather, or other suitable pad, and cut with knife

or saw according to the thickness or gauge of the metal.

Modelling. Finally, it is fixed upon the wood with fine nails. The wood is first stained a suitable colour, unless it was satisfactory when purchased.

Fig. 10 is another peacock design adapted to the

shape of a hand-mirror. It might easily form part of a set with the brush-back on Fig. 9, as there is much similarity in the two designs. The method of procedure is the same as that described for the brush-back.

Serviette rings are easily adorned with pewter.

The wood ring can be

obtained from the
Serviette "Dryad Handi-
Rings. crafts," from

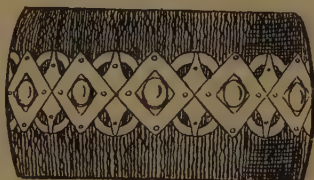
Messrs. Reeves, Winsor & Newton, and other firms who deal in handicraft materials.

The first thing is to prepare a design. Cut a strip

of paper and wrap
Design. it round the ring

in order to ascertain the length of pewter required, and the number of repeats

needed for the design. Settle the width of the decoration, and design the pattern within the limits thus set. The safest plan is to divide the length into a number of equal divisions so that the pattern may repeat uniformly and evenly. The upper design of the two here shown, Figs. 11 and 12, grew from a series of diamond shapes, set side by side with a boss in the centre of each. Alone they seemed isolated and



Napkin rings, pewter
applied to wood

F J Glass.



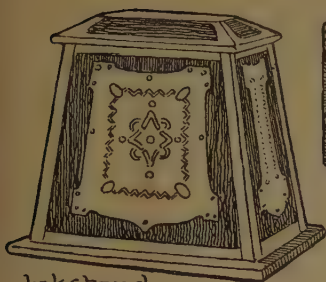
FIGS. 11 and 12.

lacking in cohesion, so the curves at top and bottom were introduced in order to bind them together; finally the spear-head forms were inserted to enrich the spaces which otherwise appeared somewhat empty.

After the wood has been stained to the desired colour, the metal is fastened in position with fine nails as before. It is quite easy to persuade the soft pewter to conform to the curvature of the ring. The lower ring, Fig. 12, was planned as two horizontal bands with vertical strips at regular intervals to connect them. Points were added in the centres of the lines, and the angles rounded off. The result is simple enough, but also satisfactory, I think. It is better in both these rings if the ends of the pewter overlap so that the rivets at the joint may hold both at once.

Fig. 13 illustrates further some examples of pewter applied to wood. Suitable articles are easily procured, and the ones here shown by no means exhaust the best, as there is a considerable variety to choose from. They are mostly of whitewood, and are primarily intended for staining, or marqueterie as it is often erroneously called. It is an advantage to have a white wood, as it can be stained to any desired colour. The inkstand is edged with pewter, the side-pieces overlapping those at top and bottom. The top of the lid can be cut in one piece, or the outer portion in one and

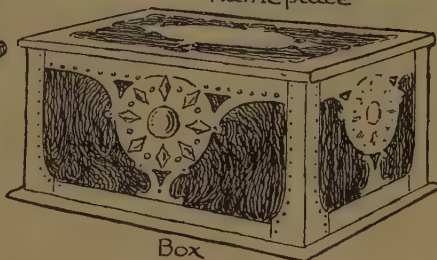
*Wood and
Pewter.*



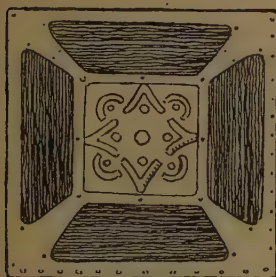
Inkstand.



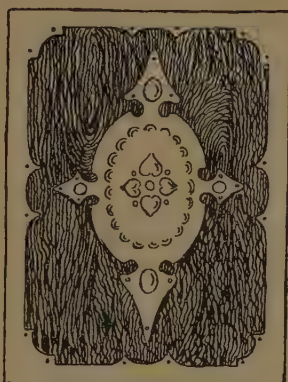
Nameplate



Box



Lid of inkstand



Lid of box
Pewter decoration
applied to
articles of wood



Rack for

Newspapers

FIG. 13.

the centre square in another. The panels which decorate the four faces of the stand are of course cut separately. The pattern is developed from the punches and is worked from the back in order that it may be in relief on the front. It is wiser to prepare paper patterns before attempting to work on the pewter. When the decoration is complete the metal is fixed in position.

The name-plate is fixed to a board. The lettering here needs careful drawing and spacing, and consequently must first be set out on paper. *Name-plate.* The drawing is then transferred to the face of the pewter and outlined with a firm point. This will leave a clear impression on the reverse side, which will enable us to raise the lettering from the back with the steel modeller. It is not necessary to attempt high relief for the lettering, but if such should be desired, it becomes necessary to support the raised letters with plaster, resin, or special material sold for the purpose. This is inserted into the hollows on the reverse side before the pewter is fastened to the board. The boat forms at the top corners, and the contours of the plate are cut with shears and fret-saw, and finally smoothed and corrected with a knife or files. The box is treated in the same manner as the articles previously mentioned, so there is no need to repeat the description. The pattern again is the outcome of the use of punches.

The newspaper-rack is decorated with floral patterns, adapted to the shapes of wood employed in the construction of the rack. Having decided upon suitable shapes for the decoration,

Newspaper-rack.

we proceed to arrange the main lines, and the disposition of the flowers, which form spots of interest as it were, in the design. The leaf forms are then considered, clothing the lines and filling up the spaces. It will be noted that the various parts of the design are closely knit, leaving but small spaces between. This was done in order to keep the metal strong, and to minimise the danger of it falling to pieces. This is a factor which must always be considered in a pierced design, also in a stencil, because the pattern depends partly upon the portions which are cut away and partly upon those which remain; but if we are not careful in our planning we shall find that the portions we intended to leave intact have fallen away with the pierced shapes, the result being a huge blank space, instead of a number of interesting small ones, bounded by the material.



CHAPTER III

PEWTER APPLIED TO WOOD (*Continued*)

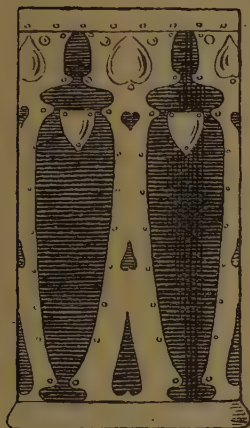
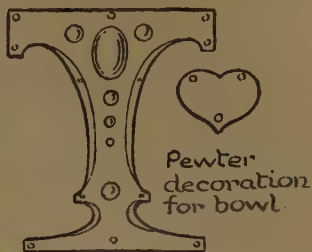
FITTING PEWTER TO BOWLS, VASES, ETC.

FIG. 14 shows further articles of wood adorned with pewter. The bowl is decorated with half a dozen shapes, with small heart-forms interspersed, while the rim is one continuous strip joined at the ends. To fit the shapes in correctly it is a *Bowl*. good plan to wind a strip of paper round the top of the bowl, and set the length out on a larger sheet; treat the base in a similar manner, and also measure the depth of the curved contour. By dividing the circumference of the top and also of the base into six equal parts, we obtain the correct proportions of the decorative unit to be applied, while its length is that of the curved contour.

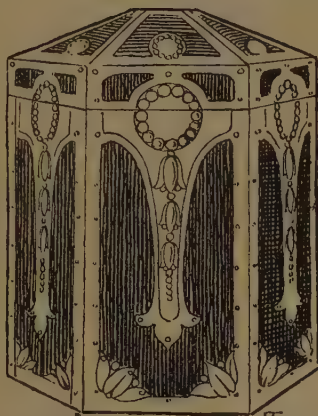
When the shape is decided upon, a paper pattern should be cut and fitted to the bowl in order to ascertain whether it is correct in size and shape. The pattern will, of course, not lie as closely in contact with the form as will the pewter later on, but it will be near enough for the purpose. When the pattern has been fitted satisfactorily, it is laid upon the pewter, and the contours marked thereon with a



Bowl



Cylindrical Vase



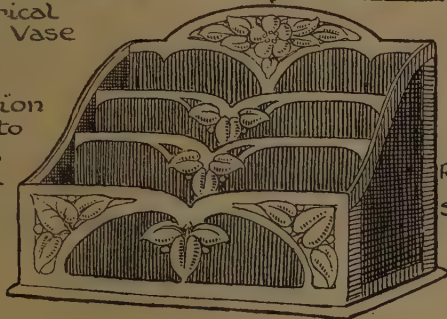
Tea caddy



Paper knife

E.J. Glass

Pewter decoration applied to articles of wood



Rack for Stationery

FIG. 14.

hard point. When the first piece has been cut, it is wise to fit it to the contour of the bowl, as closely as possible, in order to discover whether any alterations are necessary before cutting the rest. As previously stated, pewter can be manipulated to lie in much closer contact than paper, because it is more amenable to treatment, stretches further, and remains

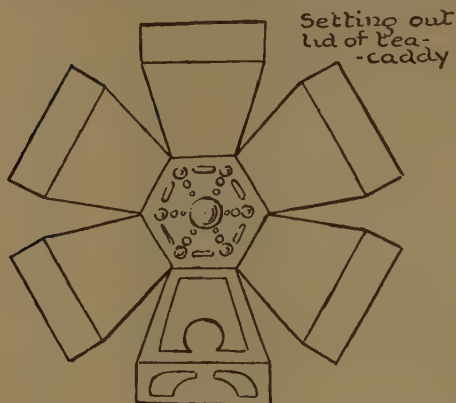


FIG. 15.

where it is placed more docilely. The other shapes can be cut from the first one, if it be necessary to make any alterations. The heart-forms are also cut from a pattern previously designed to fit pleasantly into the spaces allotted to

them. The rest of the procedure has already been described.

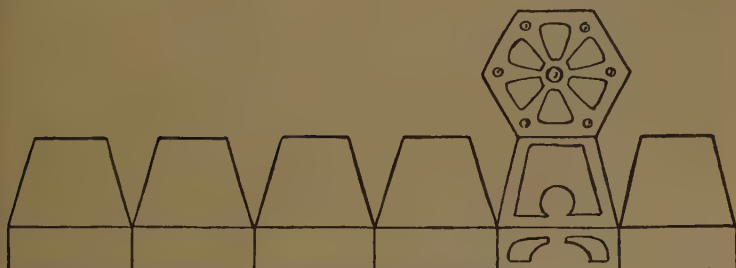
The cylindrical vase needs no explanation. The vertical strips are four in number, with four small shield-forms between. There is less difficulty in fitting the pewter to the cylinder than there was in fitting it to the bowl.

The tea-caddy requires a little consideration because of its lid. The slope from the larger hexagonal

base to the smaller top necessitates a careful setting out on paper before the pewter is approached. Figs.

Caddy. 15, 16, give two methods of doing this, and the one adopted depends either upon the metal at our disposal or the preference of the worker. In either case it will need to be accurately set out with geometrical instruments, to ensure neat joints and correct shapes.

Still another method would be to cut the hex-



Alternative setting-out for lid of tea-caddy

FIG. 16:

agonal top in one piece, as represented by the central portion of Fig 15, and the vertical border as a separate band. The box portion may also be developed in various ways. The central panels with the husk pattern might be cut separately and applied, while the angle pieces are superimposed. Each rectangular face may be treated as a complete whole cut from a sheet of pewter and applied separately, or the whole six may be cut at once and fastened to the basic form simultaneously. These things can be decided

by the craftsman, guided by his knowledge and experience.

It is part of the fascination of craft work, the planning and scheming that each new undertaking requires before it can be carried through. There are certainly ways and means (provided by philanthropic caterers for the public welfare) by which these problems may be avoided. They are prepared to supply the box, or other articles, together with the shaped metal, upon which is traced a design (usually atrocious) ready for execution. The only work that falls to the craftsman's share (if craftsman he may be called) is the bossing up of the pattern and the driving home of the nails. I am not sure whether the holes are not already bored for the reception of the nails, but I can quite believe that they are. But there is very little satisfaction in carrying out another man's design. It is far more enjoyable to plan the work from start to finish, as it is possible then to claim it as one's own. In the other case it is scarcely honest to do so when all the difficulties have been smoothed away before we see the thing; besides which we are deprived of most of the joy that belongs to craft work. Even the woodwork can be designed and executed by the really enthusiastic; but that is another craft, and so beyond our immediate consideration.

The paper-knife is of wood, bone, or ivory, with a handle of pewter which is carried part of the way

along the blade in the form of conventional leaves. Here again we have to decide upon a method of procedure in order to make a neat job of it. Wrap a piece of paper round the handle to ascertain the amount of pewter needed to enclose it. Cut a pattern complete

with decoration, and fit carefully to the handle in case any alterations are necessary. Fig. 17 indicates the shape of the pattern.

It is hardly necessary to state that by folding the paper in the centre both sides of the pattern may be cut at once, which saves time and ensures uniformity. It is better if one edge overlaps the other where the join comes, for then the upper edge may be filed or smoothed until it merges imperceptibly into the surface. A butt joint where the two edges lie side by side is not easy to

manage neatly, besides which it necessitates two rows of rivets or nails. It is better if the nails are driven in on either side of the handle, though they serve no very useful purpose on the side opposite to the joint, but it makes for symmetry.

The decoration of the stationery-rack is another problem which needs thought, owing to the rather

Pe.C.—3



Pattern for handle of paper-knife.

FIG. 17.

complex form, but in the light of what has already been written the solution should prove easy enough.

Stationery-rack. The curved lines will occasion some care, as the pewter needs to be gently but firmly persuaded to adopt the curvature without buckling or creasing. Should creases occur, they may be filed or scraped down, and the metal brought to an uniform smoothness.

These are but a few of the many possibilities which lie in the combination of wood and pewter. There are innumerable others, which will suggest themselves to the ingenious craftsman who has been encouraged to undertake some of the exercises here dealt with. There is on sale a diversity of white-wood objects which lend themselves readily to this form of decoration, while those who can produce articles of wood for themselves can design and make exactly what they desire, both in wood and metal. We now pass to articles wrought in the metal alone.



CHAPTER IV

“ RAISING ” BOWL FORMS

PLANISHING

TRAYS are perhaps the easiest to commence with, as they are fairly shallow and do not require so much “ raising ” as bowls, cups, vases, etc. Fig. 18 shows a few suitable forms. The first one is circular, and consequently is struck with the compass.

Trays. First the size is settled upon, according to the purpose for which it is needed. It may be just a decorative plaque to adorn the wall, or a tray for ashes, cards, or other purpose. Having settled the size and struck the circle needed, upon paper, we proceed to estimate the width of the border. This depends partly upon the ultimate purpose for which it is required, and partly upon the taste of the designer. At any rate, it should not be disproportionate, either wide enough to compete with the recessed part, or narrow enough to be insignificant. In most satisfactory designs there is a dominant proportion, to which all others are subordinated. Here the centre or useful portion predominates.

Having settled the proportions, we proceed to design the decoration. Here there are four repeats

of a central floral form flanked by two conventional leaves. The circle was divided by drawing two diameters crossing at right angles in the centre, and the design planned with one repeat in each quarter section of the border. Having drawn the design, we transfer it to the pewter by means of carbon paper. The metal must of course be thicker than that with which we have previously worked, as on this occasion it must be self-supporting, there being no basis of wood or metal to strengthen it. When the pattern is transferred, it should be impressed upon the metal by means of a steel point, so that should the carbon get rubbed off during subsequent operations the lines will still remain for our guidance.

The next step is known as "tracing," and this requires a little practice. The tracer is a steel tool shaped somewhat like a small chisel, but *Tracing.* blunt instead of sharp-edged, and slightly wider at one end of its edge than at the other. There is also a very slight rounding of the angle at the broader end. The taper which results is to allow the tool to move forward with freedom, while the rounding is to facilitate its manipulation when turning curves or angles. The tool is held in the left hand, between the thumb and the first three fingers. The first two fingers grip the tool, while the third rests partly upon the pewter and partly against the tool, serving a double purpose in guiding and steadying it in its course (see Fig. 3). The right hand holds



Section

Pewter trays



Section



Section

Section.



F J
Glass

FIG. 18.

a repoussé hammer with which a series of rapid, uniform taps are administered to the head of the tool, driving it forward slowly and evenly upon its course. The tool is tilted backwards at a very slight angle, so that each blow of the hammer tends to drive it forward as well as to impress it into the pewter. The slight taper on the edge further assists. At sharp angles or curves the tool is tilted a little more in order that it may move easily round the bend. It is much wiser to practise upon a spare

Beating metal on
sandbag



FIG. 19.

piece of pewter than to commence upon an important work without previous practice.

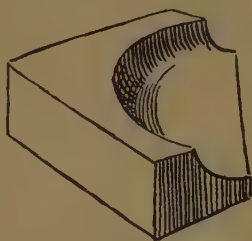
During the tracing process the metal should rest upon a sheet of linoleum, or other firm though

slightly yielding surface. A soft wood without pronounced grain is useful for this purpose, but a marked grain should be avoided, as it gives a very uneven line.

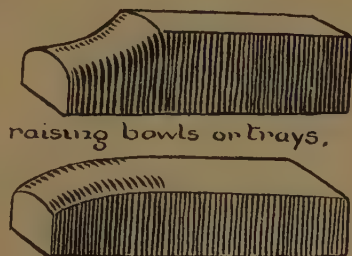
When the pattern has been traced, it is necessary to sink the centre part of the tray, as indicated by the section on Fig. 18. For this purpose we shall need a mallet, a raising hammer, a sandbag, and some suitably-shaped stakes. The sand-bag, Fig. 19, is a flat, circular bag formed of two discs of leather stitched together at the edges

*Sinking
Recess in
Tray.*

and tightly packed with sand. This offers a smooth surface with the proper amount of resistance, far more suitable than wood. The metal is placed upon the leather and repeatedly struck with the hammer or round-ended mallet (inside the border line). In order to secure an even depression, the blows should fall side by side in a uniform sequence upon a series of concentric circles. These circles should be struck with compass or dividers upon the metal before commencing to hammer. They will serve as guide lines during the raising process and should be strictly adhered to when distributing the blows. Care exercised at this stage will save much trouble during later ones, for once the shape loses its symmetry it is a very difficult matter to restore it. The hammering stretches the metal and so forms the recessed hollow needed for the tray. The centre part, which is kept flat, is of course left untouched, as no stretching is needed.



Shaped wood blocks for
FIG. 20.



raising bowls or trays.

FIG. 21.

Another method of obtaining the depression is to cut a curved hollow from a block of hard wood as shown in Fig. 20, and to beat the metal into it. Yet another is to cut a convex curve from a hard-wood block, oak or ash, finishing the surface with a rasp, and finally with glass paper, Fig. 21. Fix the block in the vice, and with a wedge-shaped mallet beat the pewter over it, slowly revolving the metal so that the blows fall evenly side by side, until the desired form has been obtained. The blow needed for this purpose is a peculiar one. It is a sort of pulling or stretching blow, aimed not to compress the metal between mallet and stake, but a little behind that part of the pewter which rests upon the block, so that the metal is stretched or pulled over the curve, Fig. 22.

*Blocks or
Stakes.*

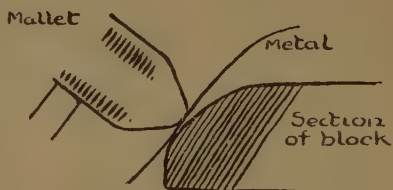


FIG. 22.

PLANISHING

When the correct form has been obtained, the metal is planished. This may be done upon the hardwood block, though an iron stake is better because *Planishing.* it offers a more resisting and polished surface. The planishing hammer has a smooth polished face, not absolutely flat, but with a suspicion of a curve particularly on the edge, in order to lessen the

danger of scarring the metal. The pewter is held in position upon the stake with the left hand, while the hammer falls squarely upon it, so that it is compressed between stake and hammer at each blow. The result will be, if properly done, a series of smooth facets, which help to true up the form, while finishing and hardening the surface of the metal, Fig. 23.

Planishing is difficult at first, but with practice it becomes easy enough. The difficulty lies in striking with the face of the hammer flat upon the metal, instead of the edge, which merely indents instead of smoothing. The ring of the hammer as it falls will indicate whether it is striking squarely upon the stake

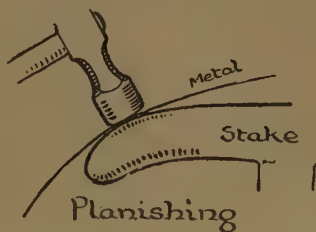
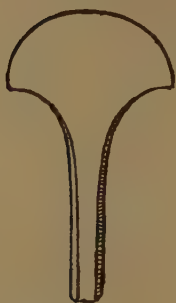


FIG. 23.

with the pewter between. When commencing, tap lightly with the hammer until you feel the stake beneath; then keep the right elbow close to the side, so that the hammer rises and falls in exactly the same curve, while the pewter is being slowly revolved with the left hand so that the blows may fall quite close to each other, ensuring a smooth, even surface, Fig. 23.

When the recessed portion is finished, the tray is laid face downwards upon a sheet of linoleum and the border pattern embossed from the back. The design will be plainly visible because traced lines will

appear raised. If necessary, it is finished from the front, though care is needed as steel punches are apt to cut the soft pewter. Boxwood punches are best for surface work, though steel are quite good if used with care and skill. The extreme margin of the tray should be turned over the edge of a sharp stake until it makes a right angle with the border. This



Half-moon
stake.

FIG. 24.

serves to strengthen and also to finish the edge. A stake shaped like a half-moon, Fig. 24, is useful for this purpose. It is quite possible that the first effort will not be quite what we could wish, but there is no need to be discouraged, for practice makes perfect, and we can hardly expect to do at the outset what others have only achieved after years of labour. Much of the joy in craft work lies in the effort needed to overcome difficulties, and it

is worth while if only for this, even though we can never quite satisfy ourselves with the result. In fact, it is perhaps just as well if we are not satisfied, for then we shall keep on striving to improve.

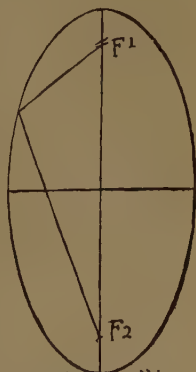
The elliptical tray involves the construction of the ellipse. This should be set out upon paper. Determine the length and width of the tray, and draw the two axes, crossing in the centre. Take one-half of the long axis in the compass, and, setting the point, at one end

*Elliptical
Tray.*

of the short one describe arcs cutting the long axis at F_1 and F_2 , Fig. 25. These are the foci of the ellipse.

*Constructing
Ellipse.*

Drive a pin into each of the intersections or foci, loop a piece of thread over both pins, and join the ends with a slip-knot. Place the point of a pencil into the loop and stretch the thread until the pencil-point rests upon the end of the long axis. Fasten the slip-knot so that the loop reaches from the pin inserted into one of the foci to the other end of the long axis which contains the foci. Now, keeping the point of the pencil close against the thread, proceed to describe the ellipse. The two pins and the pencil point will keep the thread taut, allowing sufficient play to guide the pencil-point round the ellipse (see Fig. 25). Having set out the ellipse, draw another inside parallel with the first, and equidistant from it, to indicate the width of the border. Now recess the centre upon sandbag and suitable stake as previously described. Draw the pattern for the centre of the tray and transfer it to the metal. Trace the lines of the design with the tracer and emboss slightly from the underside, or by beating down the ground just outside the ornament. Some difficulty may arise when embossing



Describing ellipse
by means of
thread.

FIG. 25.

the recessed base, as the metal will not lie in contact with the linoleum or wood, if the latter happens to be at all large. It may be possible to fit the sand-bag into the centre of the tray, if it is small enough. If this cannot be done, a block of wood with a pad of linoleum or felt resting upon it will serve the purpose. It is essential that the support, whatever it may be, should be firm enough to withstand the weight of the blow from the hammer, without risk of spoiling the contour, while at the same time it is sufficiently yielding to allow for embossing. It is not wise to raise any high bosses in the centre of a tray, especially if it is intended to hold cups, glasses, or other similar vessels. The border is embossed from the back with an elliptical punch and a small round one. The pattern is formed by the repetition of the units so obtained in alternation. Finally, the edge is turned down at right angles to strengthen and finish it (see section, Fig. 18).

The two trays at the bottom of Fig. 18 need little explanation in the light of what has already been written. They are first planned upon paper, and their shapes, proportions, and decoration decided upon. The metal is then cut, and recessed as before, while the ornament is applied with suitable punches. The decoration here is the outcome of punches only, as indicated on Fig. 1.

CHAPTER V

FITTING AND JOINING

FIG. 26 shows a few examples which call for fitting together and joining. The scoops are discs of metal hollowed upon the sandbag and planished upon a stake. The handle of one is pierced, while the other is ornamented with repoussé work. They are fixed to the scoops by means of rivets, which

Rivets. can be purchased from dealers in tools and metals. Holes are drilled in handle and scoop simultaneously, and the rivets inserted. If the rivet is flat-headed, it is simply a matter of laying the flat head upon a smooth iron stake, and hammering the end which projects within the scoop, until it gradually spreads, and so holds the two thicknesses of metal together. The round end of the repoussé hammer is useful for this purpose, as it is just large enough to meet the end of the rivet shaft. Do not hurry this operation, as it is better if gently done, and there is less risk of damaging the scoop. If the rivet has a round head, and often these are preferable because of their more decorative appearance, it will be necessary to have a doming block, or a

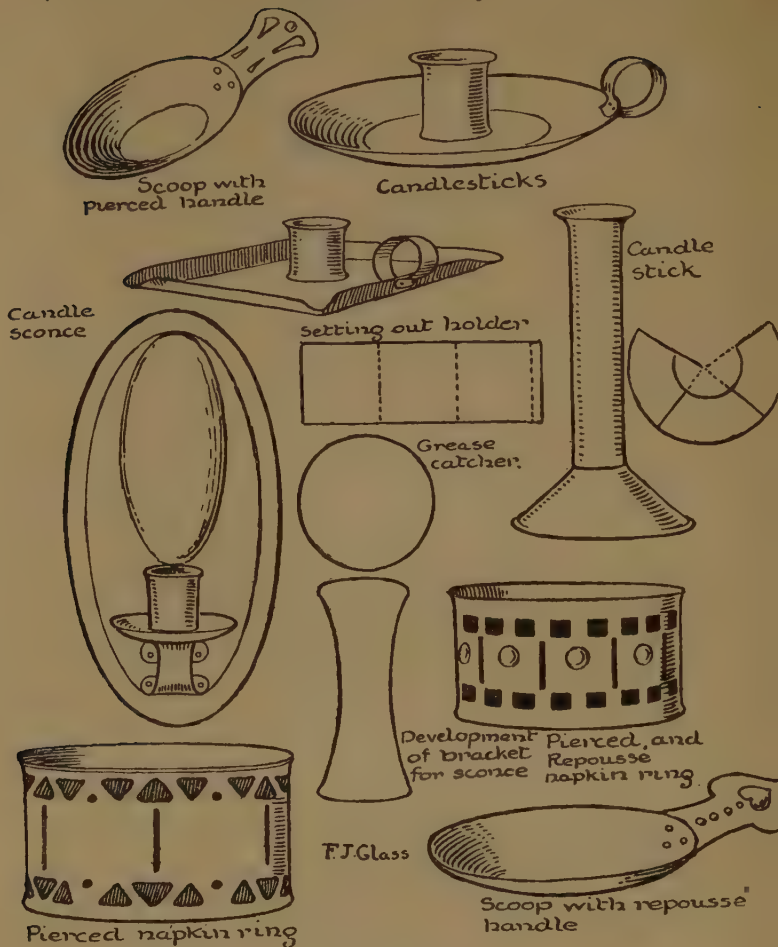


FIG. 26.

doming punch of suitable size, in order to preserve the head of the rivet. The doming block is a slab

of iron with a series of graduated round hollows drilled in its upper surface. The head of the rivet is set into the hollow which coincides with it while the shaft is hammered over. A doming punch is a cylindrical rod of iron or steel with a similar recess at one end, and they vary in size from quite small to fairly large. This punch, when chosen to fit the rivet, is fastened into the vice, so that it provides a firm base to hammer upon. Bifurcated or split rivets are often useful if the work is delicate or otherwise unsuited to withstand a lot of hammering. They spread more easily than the ordinary rivet with the single shaft.

The candlesticks are of three different kinds. The first is a cylindrical holder set in a recessed dish to which is riveted a handle. Here soldering is introduced, and it seems hardly necessary to say that, owing to the low melting-point of pewter, this is a delicate business. The solder is necessarily that known as "soft," and is composed of tin, *Soldering.* lead, and a small proportion of bismuth. It can be purchased in long strips ready for use. A "flux" is necessary, which may be resin or "killed" hydrochloric acid, though the best and most easily handled is fluxite. A soldering iron is not necessary for the work in hand, as the solder can be "sweated" into the joint. The edges to be joined are first brought into fairly close contact, scraped clean and bright, and smeared with fluxite. A match-stick is

quite good for spreading it over the joint, as it is nasty stuff to get on the fingers.

Take the shears, and cut some small pieces of solder from the strip, and lay them at suitable intervals along the joint. Now bring the flame of the blow-pipe to bear gently upon the whole of the metal, gradually raising the heat until the flux begins to bubble. If, in so doing, it displaces the solder, lay it back in position, and continue to play the flame upon the work until the solder flows into and along the joint. As soon as this happens, withdraw the flame or the pewter will melt, because its fusing point is only a degree or so higher than that of the solder. If too much solder has been applied, it may be filed or scraped away, leaving a smooth, neat surface, though if it has been properly judged there should be little, if any, to remove. The fluxite is wiped off with a rag dipped in paraffin.

It has been said that soldering is a delicate operation. It needs a little experience to estimate the heat required, and also how to manipulate the flame to the best advantage, because when the metal is heated to the proper degree, the flame is applied directly to the solder in order to melt it and make it flow. If, however, the solder is melted before the pewter is hot enough, it simply burns but refuses to flow along the joint. Hence it is advisable to practise with spare pieces of metal before attempting to solder important work.

The cylindrical holder is set out on paper in order to determine the size of the metal required. The strip needed is three times the diameter of the cylinder (see Fig. 26). When the strip is cut, it is curved round a cylindrical stake or rod until it assumes the correct tubular form with the edges in uniform contact. The joint is smeared with fluxite, and some snippets of solder laid along the joint inside the tube so that the superfluous solder may not appear on the outside. The rest of the process has already been dealt with. When the cylinder is soldered, the top is curved outwards by holding it against the block of hard wood illustrated in Fig. 22 and gently beating the inside of the tube. This should be done gently and carefully or the metal will split. The base is also curved outwards, but to a lesser degree.

The dish is a disc of pewter beaten into a shallow bowl form with a flat base. When this is raised and the edge turned over, the handle is made. This is a strip of metal shaped like a ring with sufficient left over at either end to fit the contour of the dish. It is a good plan to fold the edges of the strip on both sides in order to strengthen the handle and to make it neat and smooth. When fashioned, it may be fastened into place with rivets or solder. The cylindrical holder is finally soldered in position in the centre of the bowl. This needs care as there is a fair amount of metal to heat before the solder can be expected to run. It is better to "hasten slowly"

when undertaking soldering of this type. The square candlestick is easier because the dish or grease-catcher requires less skill in its shaping. It is simply a square of pewter with the sides turned up and the superfluous material at the angles curved neatly in order to avoid unsightly corners. The holder and the handle are executed in precisely the same manner as the previous one.

The tall candlestick is fairly obvious in its construction. The shaft is first made as a tube, and the upper end spread outwards by hammering over the wood block, Fig. 22. The base is conical and needs to be set out on paper as shown in the diagram, Fig. 26. First draw the truncated cone (representing the base) in elevation and produce the sides until they meet. Place the point of the compass upon the intersection and describe circles passing through the upper and lower angles of the truncated cone (see diagram). Set off on either side of the centre shape a length equal to that of the centre, and draw lines to the centre. This gives the shape of the metal required. It is next bent into the form of a cone and the edges soldered together. The shaft is inserted into the opening at the top and soldered in place. In order to prevent the candle from slipping into the tube a disc of metal is soldered inside an inch or so from the top.

The napkin-rings are fairly obvious in their make-up. The decoration is pierced, with bosses introduced

into one. The pierced shapes can be cut with a sharp, small chisel, as they are simply squares and triangles. The ends are soldered together, placing the solder on the inside in order that it may not form unsightly blobs on the outside. After soldering, the metal may be smoothed and finished until the joint becomes hardly perceptible.

The candle-sconce needs a little thought. There is the main ellipse to set out, before cutting the metal, and the smaller one to be bossed up later. When this part is made, the candle-holder and grease-catcher are constructed.

The next consideration is the bracket which supports the candle-holder and grease-dish. The shape of the metal needed for this is shown in the drawing. The metal is coiled or bent so that its ends come into contact with the large ellipse, while the narrow portion forms a projection upon which rests the holder, etc. It is wiser to experiment with this bracket before actually cutting the pewter, as it must project sufficiently to carry the dish, and at the same time must enter into the general scheme and not be unsightly. For this purpose a paper pattern should be cut and tested before taking the metal in hand. When the bracket is cut and shaped, it must be fixed to the back, and for this purpose rivets are perhaps the most suitable, because it will be necessary to solder the dish to the upper part afterwards, and it

is not particularly easy to solder two joints in close proximity without damaging the one first executed. Soft solder easily melts, besides which the pewter itself will not stand too much heat, and so it is better to minimise the risk by using as little solder as is commensurate with neatness and strength. There is of course not the least objection to soldering the whole together if the worker is skilful and confident enough.



CHAPTER VI

POLISHING, FINISHING, AND CASTING

EXERCISES IN "RAISING"

HAVING now learned something of the nature of the metal, and of the manner in which it should be handled, we might attempt the raising or beating of such forms as those illustrated on Fig. 27. These "*Raising*," forms are not unlike some we have already dealt with, except that the metal needs to be carried farther upward from the base, which increases the difficulty because the pewter must be stretched or hammered uniformly if the shape is to be symmetrical and true in contour. Each form is raised from a flat disc of metal, and the procedure is much the same in all cases. The bowl or vase is first drawn full size, and the contour carefully considered. To find the size of the disc of pewter needed, the sides are laid flat, as it were, on either side of the base, and a circle described from the centre of the line. Next describe a series of concentric circles from the outer margin to the ring which represents the base. These will act as guide lines when we are hammering the metal, for, as previously stated, the strokes must be evenly distributed if the

form is to rise symmetrically and truly. The lines should be drawn with the steel point of the dividers, for unless they are scored into the metal they will disappear very quickly. Pencil lines are useless for this purpose. It seems a pity to scratch the surface of the metal in this manner, but they are easily smoothed out later during the planishing and polishing processes.

The disc of pewter is now held against the hardwood block and beaten over with the mallet as shown in Fig. 22, commencing at the base and working gradually outwards. As previously stated, the stroke should be a sort of pulling stroke, calculated to stretch the metal upwards instead of spreading it between the face of the mallet and the block. The mallet should have one end cut into a wedge form. The strokes should fall side by side as the metal revolves slowly and evenly upon the block, held in position with the left hand, while the mallet is wielded in the right. In order to ensure that the mallet shall fall upon the same part of the block each time, the right elbow is held in close contact with the body, while the forearm rises and falls in the same curve. When one complete circle has been traversed, the next is proceeded with, and so on, until the whole surface has been treated, except of course the inner circle, which represents the base.

By this time the pewter will have become hard and springy. It will have lost some of its malleability,



FIG. 27.

and needs softening or annealing. This really means heating, so that the particles of which the metal is composed are extended and loosened, as *Annealing.* it were. Hammering tends to compress them. We have already seen that pewter fuses at a low temperature, consequently great care is needed in the application of heat. It is quite easy for a skilled workman to anneal the metal with the flame of the blow-pipe, but for one who has had but little experience it is risky, to say the least of it. It is safer, therefore, at this stage to plunge the metal into boiling water, and allow it to remain for a few seconds. When taken out and cooled, it is again ready for beating. The same procedure as that previously described is gone through from the ring of the base to the outer margin of the bowl or vase. It is again annealed and hammered, and the process is repeated until the required shape is attained. It is wiser not to attempt the more complex vase forms until some skill has been acquired by experience in beating up the shallow bowls. It requires a little practice before we learn exactly where to strike in order to obtain the desired result, but after a while we can feel by the stroke itself whether metal, block, and mallet are each in their right position when the blow is struck. Again, it is difficult at first to gauge exactly where and how the metal requires stretching in order to achieve the desired form. Practice alone will teach these things, for precept

without practice takes us nowhere in craft work, and all the instruction it is possible to put into language will never help us to raise a bowl unless we actually take tools and materials and proceed to act upon those instructions. The raising of one bowl will give more real knowledge of the process than the most detailed and elaborate account which can be written. Much of the raising can be executed upon the block shown in Fig. 22, but for some forms others may be needed. These can be shaped from hard wood as occasion arises.

The fruit-stand in the lower right-hand corner is made in three sections: the bowl at the top for fruit, the inverted bowl form at the base, *Fruit-stand.* and the conical shaft which intervenes. The bowls are raised as described above, while the conical shaft is set out in the manner we have seen, and the edges soldered together. The three portions are then carefully fitted together, and adjusted if necessary, until it stands erect and symmetrical. The parts to be joined are scraped clean, smeared with fluxite, and snippets of solder placed at intervals along them. The whole is then gradually heated until the solder is sweated into the joints. It is a trifle more complicated in its make-up than the others on the plate, but is actually no more difficult to execute, if care is exercised at each stage.

When a bowl or vase has been raised to the required contour, it must be planished. For this

purpose suitable iron stakes are the best, though wood serves fairly well. A planishing hammer with smooth polished face is also necessary. The aim is to true up the surface rather than to produce the ostentatious hammer-marks which are so often flaunted upon the machine-made, so-called "art metal work" so common nowadays. Good, simple, straightforward work is infinitely preferable to the elaborate stuff which, because its makers strove to get something which does not lie within the legitimate compass of tools and materials, fails of everything save fussiness and unsuitability. Neither should there be a vulgar display of technique, such as obtrusive hammer marks, dents, or tooling. Not that they need to be disguised when they have grown naturally out of the process, but they should certainly not be imposed on the work for no other purpose than mere display.

POLISHING AND FINISHING

To smooth and polish pewter after it has been worked, files, emery cloth, whiting, or one of the many metal polishes now advertised, may
Polishing. be necessary. Edges may be smoothed and rounded with a file, or scraped with a knife, while objectionable marks or scratches may also be removed with the same implements. Emery cloth (of varying grades) is useful, and should generally be wrapped over (or better still glued to) a piece of

wood. This is not always practicable; when it is, however, it is easier to use in this way. For fine mouldings, or crevasses, a suitably shaped piece of wood, covered with emery cloth, will be useful. Naturally the emery cloth scratches the surface somewhat and necessitates considerable rubbing afterwards with soft rags and whiting or metal polish to restore the smooth surface. An old tooth- or nail-brush is also useful, with whiting or metal polish.

In some cases it may improve the work to darken or colour it. Special preparations can be obtained for this purpose, which are applied with a brush or soft rag. The metal changes colour immediately, especially if it is warmed while the patina is being applied. As soon as the desired colour is obtained, the acid (for this it actually is) should be wiped off. A little brisk rubbing with a soft rag smeared with whiting and water will take the tone from the higher portions, leaving the hollows dark, thereby adding considerably to the appearance of the work.

Another method more durable, though a little messy, is to mix some varnish with lampblack and turpentine, and brush it over the work. Allow a few minutes for it to dry and rub with a soft cloth.

Lacquer is often used to preserve the finish on the pewter. This is a preparation of celluloid *Lacquer.* which has a pungent though not unpleasant smell. It is brushed evenly and quickly over the

metal which has previously been warmed. It is then left to harden undisturbed, as the lacquer becomes streaky if worked too long. Should opaque streaks appear, warm the metal until the lacquer regains its transparency.

CASTING

Being soft and easily melted, pewter can be cast in moulds of plaster of Paris, though a little Bath-brick dust, such as that used for cleaning *Castings*. knives, will add to the strength of the plaster, which is liable to crumble when very hot. Soda, alum, or borax added to the plaster also serves to render it more heat-proof. Handles, knobs, feet, etc., for use on bowls, pots, or other articles can be cast in this manner and soldered in place. It is necessary to have a model or pattern of the form to be cast. This is modelled in clay, wax, or plasticine. A mould is made of this in plaster of Paris, either a single mould or a piece mould, according to the nature of the form. Usually a two-piece mould is needed, which is made as follows.

Having designed and modelled the knob, finial, or whatever it may be, it is necessary to arrange for the two halves of the mould. There are *Mould*. two ways of doing this, one by means of a thread, and the other by making each piece separately. When the thread is used, the model is placed upon a board which is brushed over with clay water,

to prevent the plaster from sticking. A stout thread is then placed over the modelling, beginning at the base on one side and following the contour over the top and down the other side to the base, dividing the model into two equal portions. The ends of the thread should project beyond the board and should be secured with a lump of clay or wax. It should also be pressed well into the model so that it does not become displaced during subsequent operations.

The plaster is mixed by allowing the powder to trickle between the fingers of both hands, placed together to form a scoop, into a bowl of water. This procedure is adopted in order to loosen the powder and to enable us to remove any lumps which may exist in it. When the plaster appears just below the surface of the water, it is briskly stirred by plunging a spoon or the hand well down in the bowl and moving quickly from side to side. The result will be a smooth, thick paste which will adhere to the work when applied to it. Throw this on the modelling, taking care that every part is covered and no air-bubbles allowed to form. It may happen at first that the plaster will slide off after it has been applied, but this simply means that it is not thrown on properly. The correct way is to allow it to fall from the fingers, as the hand moves, palm downwards, towards the modelling, with an upward jerk at the right moment which serves to deposit the plaster on the work.

The upward motion conveyed to the plaster at the moment it leaves the fingers is sufficient to counteract its weight if it is of the correct consistency. Thin plaster will, of course, simply run down, as its resisting powers are not sufficient to keep it in place.

Plaster soon hardens, and it should be smoothed into shape before it sets too hard. Just before it does set take the ends of the thread and pull it through the mould, cutting it into halves. This operation



Clay band round
mould.

FIG. 28.



Half-mould

FIG. 29.

must be nicely judged, because if done too soon the wet plaster will join up again while if left too long it will be impossible to cut through without breaking the thread. The mould is allowed a further period in which to harden and is then pulled away from the model.

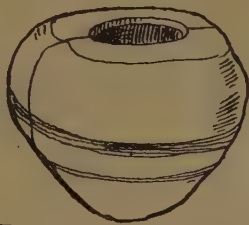
The other method is to use a band of clay or wax instead of the thread for separating the two pieces. Beat out the clay or wax into a thin sheet, and cut a strip from this of suitable width. This will depend upon the size of the model and may be anything

from half an inch or even less to 2 or 3 inches. This strip is placed over the model in exactly the same way as the thread and is pressed into close contact. This time we make our two pieces separately, so it is wise to damp some paper and lay it over one half of the model to keep off the splashes. Mix some plaster as before and cover the other half of the model, taking care that it is brought up to the edge of the band. Smooth the outer surface (see Fig. 29).



Complete mould,
showing seam

FIG. 30.



Two piece mould ready
for pouring metal.

FIG. 31.

Now remove the clay band and bore a few shallow holes to act as keys when fitting the halves together later on. Brush over the edge of the mould with clay water and complete the other half. When set, the halves are forced carefully apart, and allowed to dry thoroughly. Melt some pewter in an iron vessel or crucible. Tie the two portions of the mould firmly together, taking care that the seam is tight and close, Figs. 30 and 31. Heat the mould and pour the molten pewter into it, tilting it gently

from side to side so that bubbles may not form. This operation needs to be done expeditiously as the metal cools fairly quickly and if it congeals before the mould is filled a faulty casting will result. Allow it time to cool thoroughly, and then withdraw the mould. Polish with emery cloth wrapped about suitably shaped pieces of wood, and finally with whiting or metal polish. The last procedure is to solder the knob, finial, foot, or whatever it may be in its place upon the work we have intended it for.

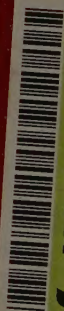
Pewter is not used to anything like the extent it was during the Middle Ages. It has been to a great extent replaced by glass and china as table ware. The Pewterers were very important craftsmen in those days, especially in England, where they were justly famed for their work. In fact we are told that a "garnish" or set of twelve of each, dishes, platters, and saucers "of good flat English pewter is esteemed almost so precious as the like number of vessels that are made of fine silver." One composition is given as 30 lb. of kettle brass to 1,000 lb. of tin with 3 or 4 lb. of bismuth, but as this was rather "brickle, the more the brass be the better is the pewter." The standard set by the Pewterers Guild was 26 lb. of copper to 1 cwt. of tin for certain articles, and equal proportions of tin and lead for others. The wardens of the Guild also appointed searchers or inspectors to safeguard their craft from fraudulent dealers and

*Historic
note.*

workers, and to see that the trade mark of the maker was upon his work. Some of the work of the old pewterers is still in existence and should be studied whenever possible, as they are excellent examples of honest, straightforward craftsmanship.

Between the late Roman period and the Middle Ages pewter seems to have been used very little, if at all. Shakespeare alludes to the use of pewter ware in the household, and also to drinking-vessels of it in inns and public-houses. After the eighteenth century it was gradually displaced by glazed earthenware, except for beer-tankards and measures of liquor. There are some splendid examples of pewter work in the British Museum.





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